

WHAT IS CLAIMED IS:

1. An electric power steering apparatus for applying an assisting steering force to a steering mechanism of a vehicle by driving an electric motor according to a steering operation performed by a steering unit for steering the vehicle, comprising:

an electric current command value calculation unit which calculates an electric current command value by correcting a target value of an electric current to be made to flow in the electric motor;

a drive control unit which controls the drive of the electric motor so that an electric current of the electric current command value flows in the electric motor; and

a convergence control unit which determines a damping compensation value, which is a correction value of the target value to be corrected by the electric current command value calculation unit, so that a quantity of steering operation performed by the steering unit is converged to a neutral point, the convergence control unit including:

a compensation electric current setting unit which determines a basic damping compensation electric current value corresponding to the correction value of the target value based on a steering speed which is a changing

speed of the quantity of the steering operation and a vehicle speed, and

a compensation electric current adjusting unit

which adjusts the basic damping compensation electric

current value based on the steering torque given to the

steering unit and the quantity of the steering operation,

thereby calculating the damping compensation value.

10 The electric power steering apparatus according to claim 1, wherein the compensation electric current

adjusting unit adjusts the basic damping compensation electric current value so that the damping compensation

value is increased when the quantity of steering operation increases more than the neutral point and then decreases

in a predetermined period of time and the steering torque

is not higher than a predetermined value.

15 The electric power steering apparatus according to claim 2, wherein the compensation electric current

adjusting unit including:

a gain deciding unit which decides a gain with respect to the basic damping compensation electric current

value based on the quantity of operation and the steering

torque, and

20 a gain multiplying unit which multiplies the basic damping compensation electric current value by the gain

decided by the gain deciding unit to calculate the damping compensation value.

25 The electric power steering apparatus according to claim 3, wherein the compensation electric current

adjusting unit including:

a gain deciding unit which decides a gain with respect to the basic damping compensation electric current

value based on the quantity of operation and the steering

torque, and

30 a gain multiplying unit which multiplies the basic damping compensation electric current value by the gain

decided by the gain deciding unit to calculate the damping compensation value.

a multiplication unit which multiplies the basic damping compensation electric current value by the gain, thereby calculating the damping compensation value, and wherein the gain deciding unit increases the gain when the quantity of operation increases more than the neutral point and decreases in a predetermined period of time and the steering torque is not higher than a predetermined value.